

**IOWA DEPARTMENT OF NATURAL RESOURCES  
WATER SUPPLY SECTION  
CONSTRUCTION PERMIT APPLICATION**

**SCHEDULE-11, Cation Exchange Softening**

|               |                  |
|---------------|------------------|
| Date Prepared | Project Identity |
| Date Revised  |                  |

1. Design Data:

| Softener:                                     | Pressure | Downflow |        |
|---|----------|----------|--------|
| Unit Number                                   | Unit #   | Unit #   | Unit # |
| Capacity (gpm)                                |          |          |        |
| Dimensions (inches)                           |          |          |        |
| Operating Pressure (psi)                      |          |          |        |
| Softening Rate (gpm/ft <sup>2</sup> )         |          |          |        |
| Backwash Rate (gpm/ft <sup>2</sup> )          |          |          |        |
| Duration of backwash (minutes))               |          |          |        |
| Resin   |          |          |        |
| Technical Name                                |          |          |        |
| Exchange Capacity                             |          |          |        |
| Salt Regeneration (lb. NaCl/ft <sup>3</sup> ) |          |          |        |
| Volume of Resin (ft <sup>3</sup> )            |          |          |        |
| Depth of Resin (ft)                           |          |          |        |

2. Provide the following salt storage information:

- a. Capacity: \_\_\_\_\_ lbs; \_\_\_\_\_ days
- b. Above or below ground: \_\_\_\_\_ Wet or dry \_\_\_\_\_
- c. Type of structure: \_\_\_\_\_

3. For the following, reference the page of the plans or specifications where the description can be found.

| Materials and Construction Details | Plan or Specification Page Number |
|------------------------------------|-----------------------------------|
| Brine Distribution                 |                                   |
| Cross Connection Control           |                                   |
| Bypass                             |                                   |
| Sampling Taps                      |                                   |
| Brine and Salt Storage             |                                   |
| Salt Storage Housing               |                                   |

4. How large an air gap is provided between the backwash water outlet and the receiving sump? \_\_\_\_\_ inches  
spec. page no. \_\_\_\_\_

5. Are automatic regeneration controls provided? Yes ☐ No ☐ Describe the regeneration procedure: \_\_\_\_\_  
spec. page no. \_\_\_\_\_

6. Can all automatically controlled switches and valves be manually operated? Yes ☐ No ☐

7. Is salinity testing equipment provided? Yes ☐ No ☐ spec. page no. \_\_\_\_\_

8. Are valve operators located within five feet of the operating floor? Yes ☐ No ☐ spec. page no. \_\_\_\_\_

9. Are drains provided for each salt storage structure and brine tank? Yes ☐ No ☐  
How large an air gap is provided between the drain outlet and the receiving sump? \_\_\_\_\_ inches

10. Are all gauges placed so as to be easily read from the normal operating floor? Yes ☐ No ☐  
spec. page no. \_\_\_\_\_